GUIDELINES REVIEW AGENDA

1300 HRS, 24 January 75

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POWER SOURCE ACTIVITY

1. Centralized Power Sources Activity

   Recap establishment, describe function, present program overview (vugraph), highlight status, offer projection. 10 min.

2. Battery Capabilities Being Added as Stock Items

   Summarize [redacted] mercads, poker chips and mercury cells (use hardware) 15 min. 25X1

3. Implications and Significance of Lithium Batteries

   Using Foote tranparency present variety and uniqueness. Assess operational values, timing and safety. 10 min.

4. Status and Probable Future for RTG's

   One schematic vugraph. Cover policy, uniqueness, detectibility, status and costs. 5 min.
   Need Ops Spec 90 days Exist Hdwe/140-160 days New Design.

5. Priority Projects and Technical Objectives

   Flexible cells, ambient energy and reliability 10 min.

6. Specific questions prompted by the FY 75 written Guideline Review. 10 min.

[redacted] 25X1

6 January 1975

FY 75 GUIDELINE REVIEW
POWER SOURCES

1. Prepare the first comprehensive BKHERALD power sources program plan and associated resource needs for FY 1976 implementation.

   a. Document and analyze the on-going power sources activities in BKHERALD. [redacted] 25X1

   b. Identify gaps or system-limiting factors in power/energy capabilities, establish priorities, and then initiate appropriate technical activities within available resources. [redacted] 25X1

   c. Exploit the technology and data base generated by widespread Government activities through establishing contacts and acquiring information pertinent to BKHERALD's needs. [redacted] 25X1

The Power Sources Program has been formatted using MBO concepts covering objectives in Technology, Operations Support and Technical Collection Support. Thirteen goal areas have been identified. A preliminary FY 76 technical program has been submitted to C/D&E for consolidation into the Congressional Budget.

Several actions have been taken to gain substantive technical inputs to insure the responsiveness of programming to priority needs. These are:

   a. Power Sources Notes are prepared and distributed internally on technical visits of interest.

   b. A Power Sources Advisory Group is being established to gain an Agency-wide technical forum for program planning guidance.

   c. A series of briefings at [redacted] has helped to identify the Power Source Activity to Agency consumers. 25X1

[redacted] 25X1

d. Extensive in-house contacts have been made and developed with power source consumers.

e. Broadened contacts with other government Agencies in Power Source work has resulted in a better use of our limited resources by capitalizing on these outside expenditures for RD&E.

2. Complete production effort for [redacted] high energy-density, silver oxide/zinc cells for early FY 1976 stock. [redacted] 25X1 25X1

The production contract for the [redacted] silver oxide/zinc cells is in effect as of June 1974. Deliveries of units for acceptance testing and stock are expected to begin in February 1975. At present scheduling, all units should be completed in early FY 76. 25X1

3. Complete short-term tests on the final prototype phase of [redacted] lithium/vanadium pentoxide "Stretched D" cells by February 1975 and initiate [redacted] evaluation by March 1975. Continue long-term tests on this system. [redacted] 25X1 25X1 25X1

Tests on the final prototype design of the "Stretched D" Li/V_2O_5 cell have begun and should be completed by February 1975. Preliminary discussions with [redacted] on qualification testing have already begun and evaluation by [redacted] can begin in March/April 1975. 25X1 25X1

4. Complete evaluation of the low-rate design 25AHr mercuric oxide/cadmium cells from [redacted] Initiate [redacted] certification by December 1974. [redacted] 25X1 25X1 25X1

[redacted] certification of these cells was begun in October 1974. The shortest duration tests have been completed and cells have met acceptance criteria to date. Longer term tests are still in progress and will be completed by October 1975. Long term tests on earlier prototype cells made by D&E are still continuing and are almost at the three year point. 25X1

5. Complete evaluation of [redacted] button type, mercuric oxide/cadmium cells. Initiate [redacted] certification by October 1974. [redacted] 25X1 25X1 25X1

Prototype testing has been completed at the [redacted] Test facility. [redacted] evaluation was begun in November 1974 and is expected to be completed by November 1975. A proposal for a thousand cells for stock is in process. 25X1 25X1

6. Complete the transfer of [redacted] 6 and 12 ampere hour rectilinear mercuric oxide/cadmium cells from [redacted] to the [redacted] production facility by June 1975 and initiate tests of delivered cells. [redacted] 25X1 25X1 25X1 25X1

This effort is underway. Due to new OSHA regulations concerning the handling and fabrication of finely divided cadmium powder, there will be a delay in the preparation of a facility for completion of this effort. Anticipated delivery of cells from [redacted] is late CY 75. 25X1

7. Complete [redacted] testing of the FLBS-2 battery transfer switch and certify for operational use by May 1975. 25X1

[redacted] 25X1

[redacted] has completed its evaluation of the FLBS-2 battery transfer switch and has certified it for field use. 40 units are available for issue upon request. 25X1

8. Complete testing of prototype sequentially-activated lithium/polycarbon monofluoride cells and silver/zinc cells and identify any necessary design changes by January 1975. Complete development of these sequentially-activated systems through final prototype stage by early FY 1976. [redacted] 25X1

Testing of sequentilly-activated cells is virtually completed at this time. Since these efforts were part of a three pronged approach to a long term audio power source, these efforts will be shelved at this time due to the more rapid progress of the other two efforts targeted toward this goal. Problem areas in the cells have been identified and there is no reason that they cannot be engineered successfully but the cost and time required to completed this effort is not deemed wise in terms of the available resources and in light of the evaluation of the mercury/cadmium cells and the FLBS-2 switch.

9. [redacted] 25X1

The RTG test program is proceeding on schedule. All designs are being tested against the PBS-1005 specifications. Tests to date indicate all units are susceptible to thermal shock and suffer degradation after periods of high temperature operation and storage. The performance of each generator when encased in typical building materials is now being evaluated.

10. Complete D&E testing of prototype 1.5 volt [redacted] lithium/iron sulfide flat cells (1" X 2" X 0.11") by January 1975. Pending results of these tests, procure second iteration for test and [redacted] certification by March 1975. 25X1 25X1 25X1

D&E testing of the Li/FeS cells have been delayed and cells are expected for delivery in January/February 1975. In order to try to make up for time lost to delivery problems, [redacted] will be asked to participate in the testing of these cells from the beginning of the evaluation rather than performing the evaluations in a serial fashion. 25X1

11. Evaluate vent design and be prepared to initiate by October 1974 a production run of [redacted] lithium/sulfur dioxide cells in "C" and "D" sizes for general use. 25X1 25X1

The power sources program has been clearly in touch with [redacted] on new concepts in venting of Li/SO_2 cells. To date there is no design which is acceptable for placement of cells in stock. However, Li/SO_2 cells are available for use on an ad hoc basis in situations where problems with venting can be minimized or where vent malfunction is of minor importance. These cells for example are presently used in [redacted] as the power source after special packaging at a contractor facility. 25X1 25X1

12. Initiate comparison testing of [redacted] lithium/thionyl chloride cells, and determine by June 1975 which cells warrant continued investigation. [redacted] 25X1 25X1

Since the $Li/SOCl_2$ system has many desirable parameters and offers a wide range of capabilities, this portion of the program has been expanded over the Guideline presented. Cells from [redacted] will be tested. [redacted] is being designed. A study contract to identify the sources of and to minimize the known problem areas will be let in early CY 75. Due to the expansion of this area of the program, it is doubtful that a determination of specific cells for further development will be made by June 1975 but there will be continued review and evaluation of all aspects of this area as all the projects proceed. 25X1 25X1

13. By January 1975, procure and test [redacted] rectilinear flat cells of the lithium/copper sulfide system for evaluation [redacted] 25X1 25X1 25X1

The rectilinear flat Li/CuS cells have been received and the test agenda is in preparation by [redacted] at this time. 25X1

14. Complete a prototype design of a flexible lithium cell by late FY 1975 and initiate evaluation. [redacted] 25X1

Firm power and configuration requirements from [redacted] regarding the possible applications of flexible cells have been obtained. A survey of contractors is underway to ascertain the best approaches to this technical goal. At this time a completed prototype design by late FY 75 looks unrealistic; completion of prototype design should extend to the end of CY 75. 25X1

15. By April 1975, complete the production of 2000 sealed, 25 AHr, mercuric oxide/cadmium cells [redacted] 25X1 25X1

Due to vendor delivery delays for subassembly parts and raw materials, completion of the 2000 cell order will be delayed until August 1975. Delivery of the first 1000 units will be achieved by April 1975.

16. [redacted] 25X1

[redacted]

Projected completed, all units will be ready for delivery in February 1975.

17. Increase the scope and capabilities of the [redacted] battery-test facility by establishing a modest analytical chemistry capability, by providing the necessary automation for secondary cell testing, and by incorporating constant-current and pulsed-discharged modes into the cell testing programs. [redacted] 25X1 25X1

A modest Chemistry Laboratory has been added to the [redacted] test facility. Arrangements are being made to provide access by [redacted] chemist to the analytical facilities sponsored by [redacted] 25X1 25X1 25X1

A twenty independent position tester was completed and is in operation. A contract to design and build pulse modules has been let.

18. Complete by June 1975 phase three of the lithium anode study, emphasizing those systems identified in phase two as offering the greatest potential for [redacted] applications. [redacted] 25X1 25X1

Phase three of the lithium anode investigation will be completed by June 1975. Much of the expansion of effort in the Li/$SOCl_2$ system has been due to work in this project. Other promising systems are under investigation but are not at the stage where they are in hardware for a specific [redacted] use. Data is being collected to expedite their development when requirements arise which will need the capabilities of these new systems. 25X1

19. Characterize and evaluate during FY 1975 new inorganic separator material for potential use in on-going power source developments. [redacted] 25X1

Inorganic separator material has been obtained from NASA and a contract to characterize and evaluate it will be let with [redacted] in early CY 75. 25X1

20. [redacted] 25X1

21. Upgrade [redacted] capabilities in the power source evaluating program.

a. Move the power source test console hardware to [redacted] by end of July 1974. [redacted]

b. Expand the capabilities of the power source sequential test console to computer control to effect a 40% increase in its capability by the end of September 1974. [redacted]

This guideline has no pertinence to the situation at this time. [redacted] will not move the power sources testing to [redacted] and the possibility of transferring the sequential test module to a contractor is under consideration at this time.

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